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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/399,109	09/20/1999	ZION HADAD		1872

7590 05/20/2003
ZION HADAD
48 HAALMOGIM ST
RISHON LEZION,
ISRAEL

EXAMINER

DUONG, DUC T

ART UNIT	PAPER NUMBER
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2663

DATE MAILED: 05/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

2

Office Action Summary

Application No.

09/399,109

Applicant(s)

HADAD, ZION

Examiner

Duc T. Duong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 September 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. In response to the amendment filed on March 4, 2003, claims 1-20 are canceled and claims 21-40 are pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 21, 22, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frodigh et al (U.S. Patent 5,726,978) in view of Marchok et al (U.S. Patent 5,995,483).

Regarding to claim 21, Frodigh discloses a unidirectional or broadcasting communication system (Fig. 1) using OFDM transmission from a base station to subscriber units, means for achieving a bi-directional channel comprising transmitting means 300 (Fig. 3) in the subscriber units for a transmission of signals that are orthogonal (Fig. 2 col. 7 lines 51-63, noted the M subcarriers are orthogonal to each others) to the signals transmitted from the base station and are also orthogonal to signals from other subscriber units; and receiving means 330 in the base station for reception of said orthogonal signals (Fig. 3 col. 8 lines 1-6).

Frodigh fails to teach for the subscriber units further include means adapting a frequency of a clock used for transmission therefrom to frequency deviations of a signal

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from the base station, and for transmitting at a corrected frequency whose value is responsive to a frequency deviation, so that the signals received at the base have a frequency corrected for that deviation.

However, Marchok discloses a digital communication system (Fig. 3) comprising receivers 150 with voltage controlled oscillator 240 to lock on to the frequency deviations for transmission of a baseband OFDM signal from the transmitter 97 (col. 5 lines 21-39), and for transmitting at a corrected frequency with a value responsive to a frequency deviation, so that the signals received at the base have a frequency corrected for that deviation (col. 5 lines 39-45).

Thus, it would have been obvious to one of ordinary skilled in the art, at the time of the invention, to include the adapting means as taught by Marchok in Fodigh's system to perform desired synchronization and carrier recovery.

Regarding to claim 22, Frodigh discloses the transmitting means in the subscriber include means 308 for the transmission of the orthogonal signals using TD, or TDD, or FDD methods (Fig. 3B col. 7 lines 28-30).

Regarding to claim 29, Frodigh discloses base station further includes means 360 for the transmission of Automatic Power Control (APC) signals to said subscriber units, and wherein said subscriber units further include means 360 for controlling the power of transmissions therefrom responsive to said received APC signals (Fig. 3A col. 7 lines 29-39).

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4. Claims 23, 24, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frodigh and Marchok, further in view of Gudmundson et al (U.S. Patent 5,790,516).

Regarding to claims 23, 24, and 27, Frodigh and Marchok discloses all the limitation with respect to claim 21, except for the base station and the subscriber units operate according to the DVB-T standard (claim 23); the base station and the subscriber units further include equalizing means and pulse shaping means for reducing the effects of multipath (claim 24); and a signal shaping means in the transmitter of the base station or in the transmitter of the subscriber for an application of a window in time to signals transmitted therefrom (claim 27).

However, Gudmundson discloses an orthogonal frequency division multiplexed system OFDM capable operating in a broadcasting (DVB-T) environment (col. 2 lines 53-54) comprising a pulseshaping multipliers 406 (equalizing and pulse shaping means) for reducing the effects of multipath (Fig. 4 col. 7 lines 50-55) and a Hanning window function (signal shaping means) in the transmitter for an application of a window in time to signals (col. 8 lines 58-67).

Thus, it would have been obvious to one of ordinary skilled in the art, at the time of the invention, to include the OFDM system as taught by Gudmundson in Frodigh and Marchok's apparatus with the motivation to reduced intersymbol interference between data symbols.

5. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Frodigh and Marchok, further in view of Davies et al (U.S. Patent 5,953,311).

Regarding to claim 25, Frodigh and Marchok discloses all the limitation with respect to claim 21, except for the signals transmitted from the base station include a guard time interval, and wherein the signals transmitted to the base station are synchronous with the guard time interval.

However, Davies discloses a COFDM system with a timing synchronization circuit for locating the guard interval (Fig. 4 col. 5 lines 5-6).

Thus, it would have been obvious to one of ordinary skilled in the art, at the time of the invention, to included the guard interval for synchronization as taught by Davies in Frodigh and Marchok's system to reduced intersymbol interference.

6. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Frodigh and Marchok, further in view of Wahlqvist et al (U.S. Patent 6,088,398).

Regarding to claim 26, Frodigh and Marchok discloses all the limitation with respect to claim 21, except for signal shaping means in the receiver of the base station or in the receiver of the subscriber unit for an application of a window in time to signals received therein.

However, Wahlqvist discloses an OFDM system with pulse shaping means for an application of a time window to signals (Fig. 5 col. 3 lines 25-63).

Thus, it would have been obvious to one of ordinary skilled in the art at the time of the invention to included a pulse shaping means as taught by Wahlqvist in Frodigh and Marchok's system with the motivation to suppressed side lobes of signal.

7. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Frodigh and Marchok, further in view of Kaiser et al (U.S. Patent 6,188,717 B1).

Regarding to claim 28, Frodigh and Marchok discloses all the limitation with respect to claim 21, except for base station further includes means for the transmission of Automatic Synchronization Control (ASC) signals to said subscriber units, and wherein said subscriber units further include means for synchronizing transmissions therefrom responsive to said received ASC signals.

However, Kaiser discloses a multi-carrier OFDM system comprises means for the transmission of Automatic Synchronization Control (ASC) signals (insertion of reference data 14) to said subscriber units, and wherein said subscriber units further include means for synchronizing transmissions therefrom responsive to said received ASC signals (Fig. 5 col. 6 lines 8-10).

Thus, it would have been obvious to one of ordinary skilled in the art, at the time of the invention, to includes the multi-carrier OFDM system as taught by Kaiser in Frodigh and Marchok's apparatus to eliminated signal-level fluctuations and channel disturbances.

8. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Frodigh and Marchok, further in view of Alamouti (U.S. Patent 5,933,421).

Regarding to claim 30, Frodigh and Marchok discloses all the limitation with respect to claim 21, except for the base station further transmits a pilot signal and wherein each subscriber unit further including means for generating the transmit signal having a frequency responsive to the frequency of the pilot signal.

However, Alamouti discloses the base station adding a pilot symbol in the transmission (Fig. 1.6 col. 15 lines 9-10) and wherein each subscriber unit further

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including a despreader for generating the transmit signal having a frequency responsive to the frequency of the pilot signal (Fig. 1.10 col. 16 lines 2-13).

Thus, it would have been obvious to one of ordinary skilled in the art, at the time of the invention, to included the used of pilot signal as taught by Alamouti in Frodigh and Marchok's system since it is well known in the art for used of synchronization in telecommunication network.

9. Claims 31, 32, 36, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frodigh in view of Wahlqvist.

Regarding to claims 31 and 36, Frodigh discloses a unidirectional or broadcasting communication system (Fig. 1) using OFDM transmission from a base station to subscriber units, means for achieving a bi-directional channel comprising transmitting means 300 (Fig. 3) in the subscriber units for a transmission of signals that are orthogonal (Fig. 2 col. 7 lines 51-63, noted the M subcarriers are orthogonal to each others) to the signals transmitted from the base station and are also orthogonal to signals from other subscriber units; receiving means 330 in the base station for reception of said orthogonal signals (Fig. 3 col. 8 lines 1-6), and wherein the OFDM decoding means comprise an FFT processor 336 (Fig. 3 col. 8 lines 42-45).

Frodigh fails to teach for a transversal filter means that reduces a pulse widening because of a window in the transmitting means; and a signal shaping means in the receiver of the base station or in the receiver of the subscriber unit for an application of a window in time to signals received therein (claim 36).

However, Wahlqvist discloses an OFDM system comprising a pulse shaping filter (transversal filter) for reducing pulse widening (col. 4 lines 5-10); and pulse shaping means for an application of a time window to signals (Fig. 5 col. 3 lines 25-63).

Thus, it would have been obvious to one of ordinary skilled in the art, at the time of the invention, to include the pulse shaping filter as taught by Wahlqvist for reduction of the guard bands and suppression of inter symbol interference (ISI) between OFDM symbols.

Regarding to claim 32, Frodigh discloses the transmitting means in the subscriber include means 308 for the transmission of the orthogonal signals using TD, or TDD, or FDD methods (Fig. 3B col. 7 lines 28-30).

Regarding to claim 39, Frodigh discloses base station further includes means 360 for the transmission of Automatic Power Control (APC) signals to said subscriber units, and wherein said subscriber units further include means 360 for controlling the power of transmissions therefrom responsive to said received APC signals (Fig. 3A col. 7 lines 29-39).

10. Claims 33, 34, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frodigh and Wahlqvist, further in view of Gudmundson et al (U.S. Patent 5,790,516).

Regarding to claims 33, 34, and 37, Frodigh and Wahlqvist discloses all the limitation with respect to claim 31, except for the base station and the subscriber units operate according to the DVB-T standard (claim 33); the base station and the subscriber units further include equalizing means and pulse shaping means for reducing

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the effects of multipath (claim 34); and a signal shaping means in the transmitter of the base station or in the transmitter of the subscriber for an application of a window in time to signals transmitted therefrom (claim 37).

However, Gudmundson discloses an orthogonal frequency division multiplexed system OFDM capable operating in a broadcasting (DVB-T) environment (col. 2 lines 53-54) comprising a pulseshaping multipliers 406 (equalizing and pulse shaping means) for reducing the effects of multipath (Fig. 4 col. 7 lines 50-55) and a Hanning window function (signal shaping means) in the transmitter for an application of a window in time to signals (col. 8 lines 58-67).

Thus, it would have been obvious to one of ordinary skilled in the art, at the time of the invention, to include the OFDM system as taught by Gudmundson in Frodigh and Wahlqvist's apparatus with the motivation to reduced intersymbol interference between data symbols.

11. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Frodigh and Wahlqvist, further in view of Davies et al (U.S. Patent 5,953,311).

Regarding to claim 35, Frodigh and Wahlqvist discloses all the limitation with respect to claim 31, except for the signals transmitted from the base station include a guard time interval, and wherein the signals transmitted to the base station are synchronous with the guard time interval.

However, Davies discloses a COFDM system with a timing synchronization circuit for locating the guard interval (Fig. 4 col. 5 lines 5-6).

Thus, it would have been obvious to one of ordinary skilled in the art, at the time of the invention, to included the guard interval for synchronization as taught by Davies in Frodigh and Wahlqvist's system to reduced intersymbol interference.

12. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Frodigh and Wahlqvist, further in view of Kaiser et al (U.S. Patent 6,188,717 B1).

Regarding to claim 38, Frodigh and Wahlqvist discloses all the limitation with respect to claim 31, except for base station further includes means for the transmission of Automatic Synchronization Control (ASC) signals to said subscriber units, and wherein said subscriber units further include means for synchronizing transmissions therefrom responsive to said received ASC signals.

However, Kaiser discloses a multi-carrier OFDM system comprises means for the transmission of Automatic Synchronization Control (ASC) signals (insertion of reference data 14) to said subscriber units, and wherein said subscriber units further include means for synchronizing transmissions therefrom responsive to said received ASC signals (Fig. 5 col. 6 lines 8-10).

Thus, it would have been obvious to one of ordinary skilled in the art, at the time of the invention, to includes the multi-carrier OFDM system as taught by Kaiser in Frodigh and Wahlqvist's apparatus to eliminated signal-level fluctuations and channel disturbances.

13. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Frodigh and Wahlqvist, further in view of Alamouti.

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Regarding to claim 40, Frodigh and Wahlqvist discloses all the limitation with respect to claim 31, except for the base station further transmits a pilot signal and wherein each subscriber unit further including means for generating the transmit signal having a frequency responsive to the frequency of the pilot signal.

However, Alamouti discloses the base station adding a pilot symbol in the transmission (Fig. 1.6 col. 15 lines 9-10) and wherein each subscriber unit further including a despreader for generating the transmit signal having a frequency responsive to the frequency of the pilot signal (Fig. 1.10 col. 16 lines 2-13).

Thus, it would have been obvious to one of ordinary skilled in the art, at the time of the invention, to included the used of pilot signal as taught by Alamouti in Frodigh and Wahlqvist's system since it is well known in the art for used of synchronization in telecommunication network.

Conclusion

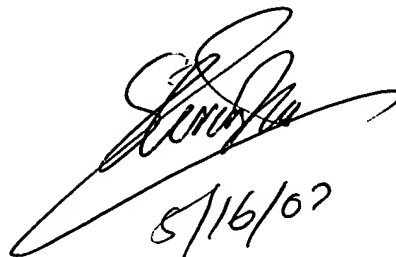
14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duc T. Duong whose telephone number is 703-605-5146. The examiner can normally be reached on M-Th (8:30 AM-5:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau T. Nguyen can be reached on 703-308-5340. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-9600.

DD
May 14, 2003

A handwritten signature in cursive script, followed by the date 5/16/02 written in a similar style.